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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/550,408 | 09/23/2005 | Miguel Albert Capote | 90078U | 2279 |
| 20/529 | 7590 | 05/23/2008 | | |
| NATH & ASSOCIATES 112 South West Street Alexandria, VA 22314 | | | EXAMINER SELLERS, ROBERT E | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/550,408

Applicant(s)

CAPOTE ET AL.

Examiner

Robert Sellers

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 6-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 12/14/2005 & 3/27/2007.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1-5, drawn to a composition comprising a high melting point metal (alloy) powder, a low melting point metal (alloy) powder, a polymerizable flux of the formula RCOOH , and an inerting agent.

Group II, claims 6-11, drawn to the composition of Group I further comprising a polymerizable diluent, free radical initiator, curable resin, crosslinking agent and accelerator.

Group III, claims 12-17, drawn to an electronic assembly comprising an electronic device and a substrate bonded by a sintered thermally conductive adhesive.

Group IV, claims 18-23, drawn to a method of attaching an electronic device to a substrate by dispensing an adhesive on the surfaces of the substrate or electronic device.

2. The inventions listed as Groups I to IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical feature. The special technical feature is the combination of a high melting point metal (alloy) powder, a low melting point metal (alloy) powder, a polymerizable flux of the formula RCOOH , and an inerting agent.

3. Zhou et al. Patent No. 5,985,456 discloses a fluxing adhesive (col. 9, lines 47-63) comprising a high melting point metal (alloy) powder such as copper, silver, gold, platinum, palladium, beryllium, rhodium, nickel, cobalt, iron, molybdenum or alloys thereof; a low melting point metal (alloy) powder such as Sn, Bi, Pb, Cd, Zn, In, Sb, Se or alloys thereof; and a thermally curable adhesive flux composition containing a fluxing agent represented by the formula RCOOH wherein R is a moiety having at least two carbon-carbon double bonds (col. 2, lines 51-53) and a resin such as a bisphenol A epoxy resin (col. 8, lines 33-37).

Accordingly, the special technical feature does not make a contribution over the prior art, thereby establishing a lack of unity between Groups I to IV.

4. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

- a) The inerting agents of claim 5.
- b) Contingent upon the election of Group II, the presence or absence of one or more of the following components, wherein if their presence is elected, a particular species is identified by chemical name:
 - (i) The polymerizable diluents.
 - (ii) The free radical initiators.
 - (iii) The curable resins.

(iv) The crosslinking agents.

(v) The accelerators.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Claims 1-23 are generic.

5. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical feature for the reasons espoused with respect to the holding of lack of unity presented hereinabove.

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6. During a telephone conversation with Matt Moffa on May 14, 2008, a provisional election was made without traverse to prosecute the invention of Group I and a bisphenol A diglycidyl ether inerting agent, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-23 are withdrawn from further consideration by under 37 CFR 1.142(b), as being drawn to non-elected inventions.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou et al. Patent No. 5,985,456.

7. Zhou et al. discloses a fluxing adhesive (col. 9, lines 47-63) comprising a high melting point metal (alloy) powder such as copper, silver, gold, platinum, palladium, beryllium, rhodium, nickel, cobalt, iron, molybdenum or alloys thereof; a low melting point metal (alloy) powder such as Sn, Bi, Pb, Cd, Zn, In, Sb, Se or alloys thereof; and a thermally curable adhesive flux composition containing a fluxing agent represented by the formula RCOOH wherein R is a moiety having at least two carbon-carbon double bonds (col. 2, lines 51-53) and a resin such as a bisphenol A epoxy resin (col. 8, lines 33-37).

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8. The claimed inerting agent such as the bisphenol A diglycidyl ether of claim 5 is disclosed but not exemplified. It would have been obvious to prepare the fluxing adhesive with the disclosed bisphenol A epoxy resin in order "to increase the adhesion of the cured composition to the substrate and to increase the cohesive strength and glass transition temperature of the cured composition (col. 8, lines 17-21)."

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chappelow et al. Patent No. 6,610,759 in view of Zhou et al.

9. Chappelow is directed to a polymerizable composition useful for a variety of applications (col. 1, lines 25-26) prepared from a most preferred formulation (col. 18, lines 47-49) of Epon 825 diglycidyl ether of bisphenol A (col. 5, lines 26-27), UVR 6105 3,4-epoxy-6-methylcyclohexylmethyl-3,4-epoxycyclohexane carboxylate (col. 4, lines 17-20) and 2-(methacryloyloxy)ethyl maleate (col. 6, line 58, MAEM).

The claimed high melting point metal (alloy) powder and low melting point metal (alloy) powder are not recited. Zhou et al. is described in paragraph 7 hereinabove.

10. It would have been obvious to add the high melting point metal (alloy) powder and low melting point metal (alloy) powder of Zhou et al. to the polymerizable composition of Chappelow et al. in order to enhance the conductivity.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Dias Patent No. 6,815,831 (col. 2, lines 46-64) and Crane et al. Patent No. 7,109,061 (col. 7, lines 42-61 and col. 8, lines 27-32) set forth blends of fluxing agents such as acrylic acid with epoxy resins.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

/Robert Sellers/

Robert Sellers
Primary Examiner
Division 1796

rs
5/23/2008